SMILEY CREEK WATER USERS ASSOCIATION INC. (PWS 5070087)
SOURCE WATER ASSESSMENT FINAL REPORT

March 22, 2005

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for Smiley Creek Water Users Association Inc.,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Smiley Creek Water Users Association Inc. (PWS #5070087) has two drinking water wells that need a susceptibility analysis conducted. This report describes Well #1 and Well #2. Currently, the system serves, on an average, 85 people through 62 connections.

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other category(ies) results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, e.g. nitrates, arsenic), volatile organic contaminants (VOCs, e.g. petroleum products), synthetic organic contaminants (SOCs, e.g. pesticides), and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, Well #1 rated moderate for IOCs, VOCs, SOCs, and microbial bacteria. System construction and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and moderate for microbial bacteria (Table 1).

In terms of total susceptibility, Well #2 rated moderate for IOCs, VOCs, SOCs, and microbial bacteria. System construction and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and low for microbial bacteria (Table 1).

No VOCs, SOCs, or microbial bacteria have ever been detected in either well's tested water. Traces of the IOC nitrate have been detected, however, according to the State Drinking Water Inventory System (SDWIS), concentrations have been significantly below the maximum contaminant level (MCL) of 10 milligrams per liter (mg/L).

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of

contamination as possible, and the site should be reserved and protected for this specific use.

For the Smiley Creek Water Users Association Inc., drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Actions should be taken to maintain a 50-foot radius circle around the wellhead clear of potential contaminants. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated assessment areas are outside the direct jurisdiction of the Water Users Association Inc., collaboration and partnerships with state and local agencies should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation contains some urban and residential land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies, please contact the Twin Falls Regional Office of the Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR SMILEY CREEK WATER USERS ASSOCIATION INC., BLAINE COUNTY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this assessment means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are included. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. EPA to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments for sources active prior to 1999 were completed by May of 2003. Source water assessments for sources activated post-1999 are being developed on a case-by-case basis. The resources and time available to accomplish assessments are limited. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. DEQ recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Smiley Creek Water Users Association Inc. (PWS #5070087) has two drinking water system wells that need a susceptibility analysis conducted. This report describes Well #1 and Well #2. Currently, the system serves, on an average, 85 people through 62 connections.

The IOC arsenic, has been detected in tested water from Well #1 and Well #2 at 0.020 mg/L and 0.023 mg/L respectively. Nitrates have been detected in the system's tested water in trace amounts, well below the MCL of 10 mg/L. No VOCs, SOCs, or microbial bacteria have ever been detected in either well's tested water.

Defining the Zones of Contribution – Delineation

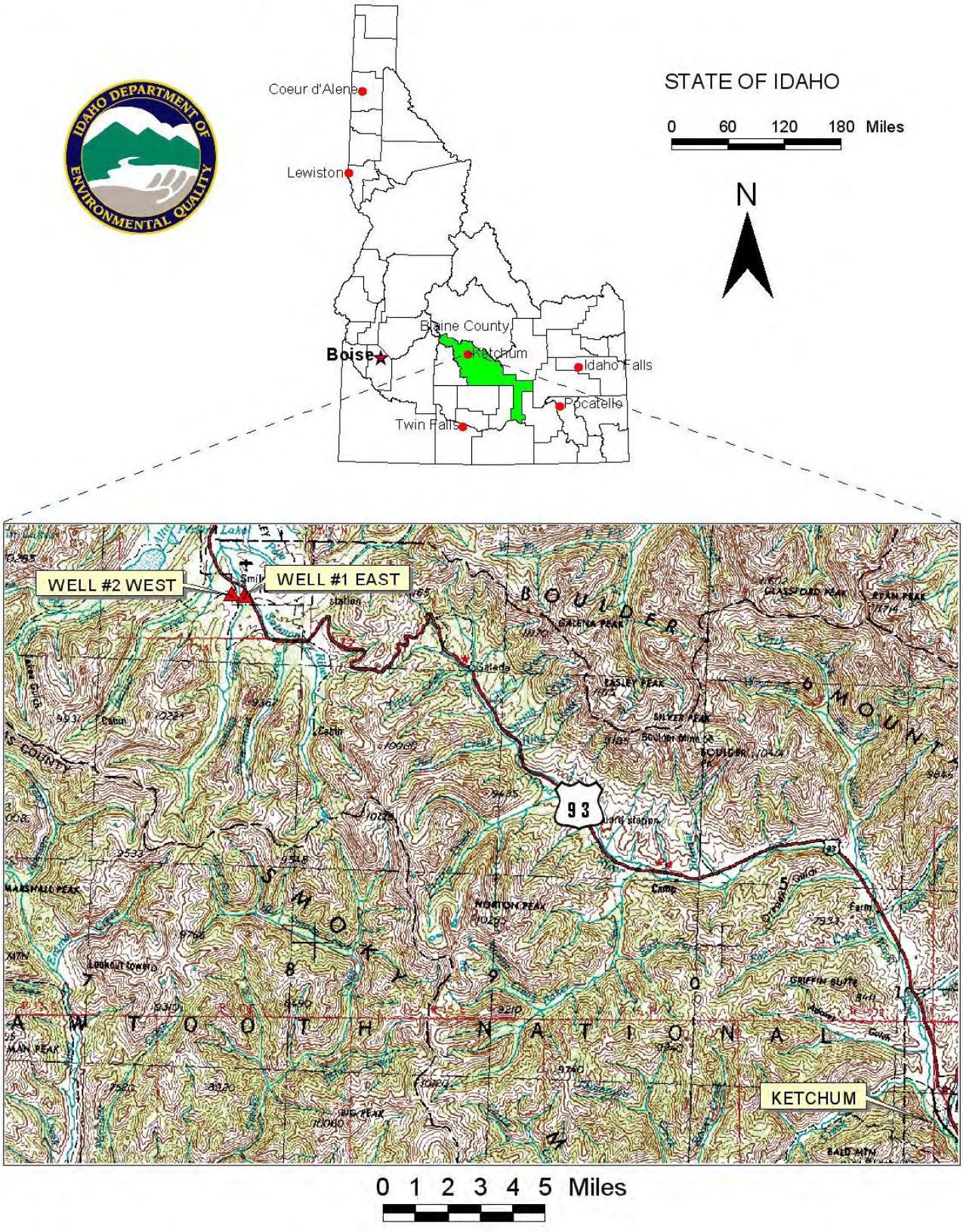
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ performed the delineation using a computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the aquifer in the vicinity of the Smiley Creek Water Users Association Inc.. The computer model used site-specific data from a variety of sources including local area well logs, and hydrogeologic reports (detailed below).

Hydrogeology

The wells are located in Smiley Creek Water Users Association Inc. southeast of Alturas Lake near the Salmon River. The wells were constructed in quaternary moraine and glaciofluvial outwash of the Sawtooth Mountains (Bogert et al 1999 and Link, 2002). The moraine outwash has been dissected by Little Beaver Creek and Smiley Creek which drain to the Salmon River. The wells obtain water from groundwater flow recharged by local precipitation and snowfall in the Sawtooth Mountains and probably intercept surface water from Little Beaver Creek, Smiley Creek, and the Salmon River, depending on the extent of the drawdown in the wells.

The depth to ground water is shallow, less than 35 ft in some areas, and the position of the ground-water table is assumed to be coincident with the water level in the small streams that drain the area. Depth to bedrock is unknown. No wells penetrating the moraine outwash and recent alluvium were found in the area, based on a search of Idaho Department of Water Resource's (IDWR) website.

FIGURE 1 Site Vicinity Map of Smiley Creek Water Users



Model Description

The WhAEM analytical model was used to delineate a capture zone for the wells. The choice of boundary conditions greatly affects the results of the modeling because the boundaries are so near the wells.

It was assumed that the streams are hydraulically connected to the groundwater so constant head boundaries were assigned to Little Beaver Creek, Smiley Creek, and the Salmon River in the area of the wells. A uniform recharge rate of about 4 in/year was assigned to the model area.

The hydraulic conductivity was set at 6 ft/d. This value was necessary to keep the well from drying up at the stated pumping rate of 90 gpm for each well and matches the value estimated from specific capacity data reported in the drillers logs for wells in the area. It was assumed that the hydraulic conductivity is uniform throughout the vicinity of the wells and there are no apparent barriers to flow between the streams. The aquifer bottom was set at 7065 ft to match the aquifer thickness penetrated by the west well.

Model simulations show that the wells generally intercept ground water flowing from the west toward the Salmon River. If the actual pumping level in the east well is low enough (lower than water level in nearby streams) then the well will capture water from the streams as well as ground water inflow.

The pumping rate of 60 gpm was increased 50% to 90 gpm to account for future growth.
After a range of simulations were run that best-matched the test points, a combined result was drawn and a standard buffer of 10 degrees added to the perimeter.

The delineated areas for both Smiley Creek Water Users Association Inc. wells are south/southwest trending sectors approximately two (2) miles long and one-half (1/2) mile wide (Figures 2 and 3). The actual data used in determining the source water assessment delineation area is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the area surrounding the Smiley Creek Water Users Association Inc. wells is predominately undeveloped rangeland.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal

environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in January and February 2005. The first phase involved identifying and documenting potential contaminant sources within the Smiley Creek Water Users Association Inc. source water assessment areas (Figures 2 and 3) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the delineated areas.

The delineated source water areas for Well #1 (Figure 2) and Well #2 (Figure 3) do not have any potential contaminant sources.

Section 3. Susceptibility Analyses

The well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheet. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone (aquitard) above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Well #1 rated moderate susceptibility for hydrologic sensitivity. According to the Natural Resource Conservation Service (NRCS), areas soils are moderately- to well-drained. Because the well is 105 feet deep, the depth to ground water is less than 300 feet. A well's drilling log was not available for this well, resulting in additional points added to the scoring system, because unknown factors (aquitard and vadose zone characteristics) receive the most conservative score. If a well log had been available during this analysis, the score might have been lower.
Well #2 rated moderate susceptibility for hydrologic sensitivity. According to the Natural Resource Conservation Service (NRCS), areas soils are poorly- to moderately drained. The depth of ground water was less than 300 feet due to the well only being 165 feet deep. The well log for this well was

not available, therefore the vadose zone composition and whether an aquitard exists above the producing zone are unknown. Due to these unknowns, additional points were added to the scoring system. If a well log had been available, the score might have been lower.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then the potential for contamination from surface events is reduced.

Well #1 rated moderate for system construction. A well log was not available during this analysis, therefore much of the system construction scoring was based on information detailed in the Sanitary Survey, or was assigned points in the scoring system if the information was unknown. According to the Sanitary Survey, Well #1 has a surface seal that is being maintained and in good condition. The wellhead is also located outside of the 100-year floodplain. Because a well log was not available, it is unknown if the casing(s) and annular seal extend into low-permeability units, or if the producing zone of the well is more than 100 feet below static water levels. If a well log had been available, scores might have been lower.

Well #2 rated moderate for system construction. According to the Sanitary Survey, Well #2 has a surface seal that is being maintained and in good condition. The wellhead is also located outside of the 100-year floodplain.

Current PWS well construction standards can be more stringent than when a well(s) was constructed. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the regulations deal with screening requirements, aquifer pump tests, use of a down-turned casing vent, and thickness of casing. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells.

Regulations for steel pipe thickness based on size of pipe

Size of pipe (inches)	Thickness (inches)
≤6	0.280
8	0.322
10	0.365
12-20	0.375

Well tests are required at the design pumping rate for 24 hours or until stabilized drawdown has continued for at least six hours when pumping at 1.5 times the design pumping rate.

Without a well log for well #1, the wells' construction was conservatively assumed to not meet all current standards, and therefore, both wells were assessed an additional system construction point.

Figure 2. Smiley Creek Subdivision Delineation Map and Potential Contaminant Source Locations

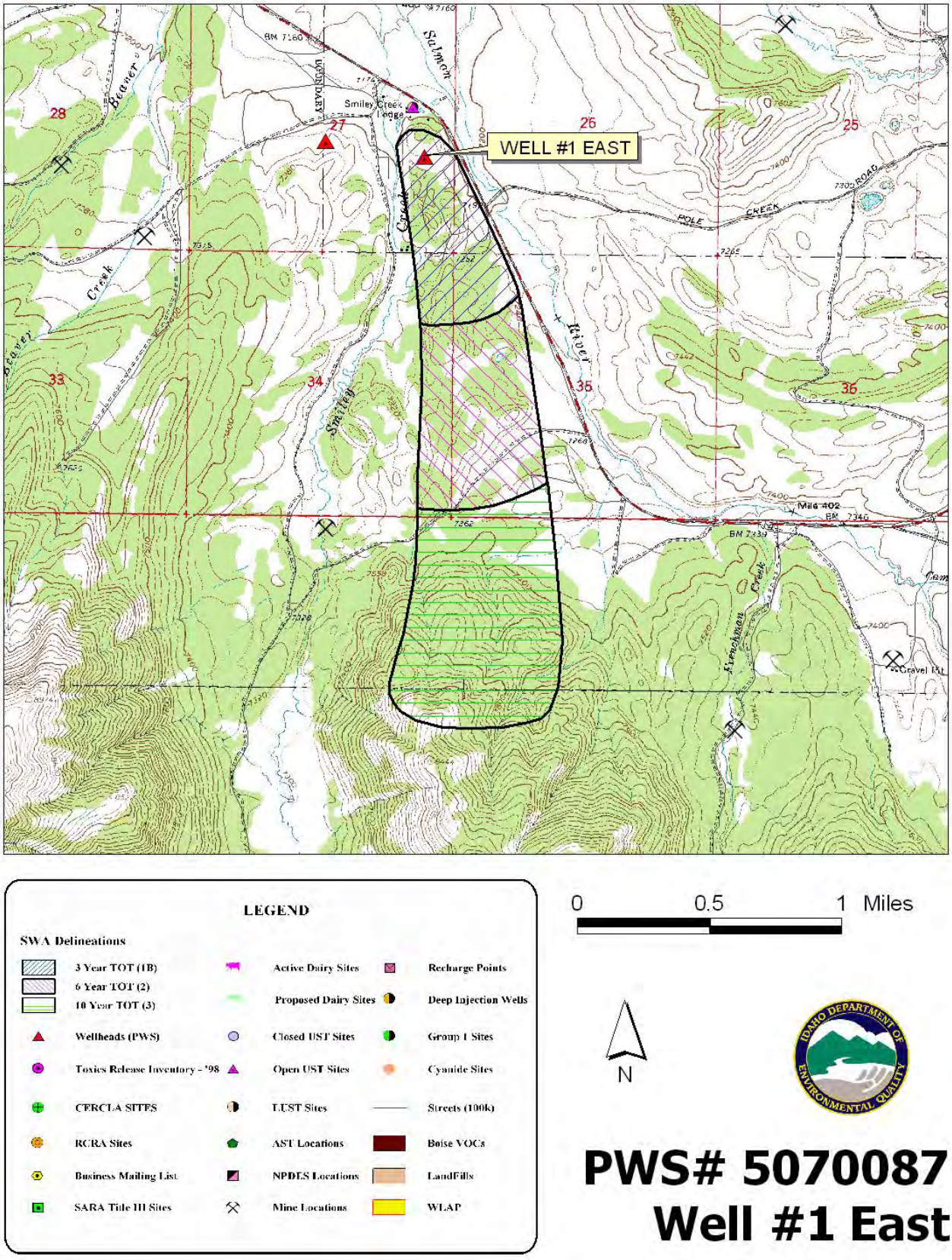
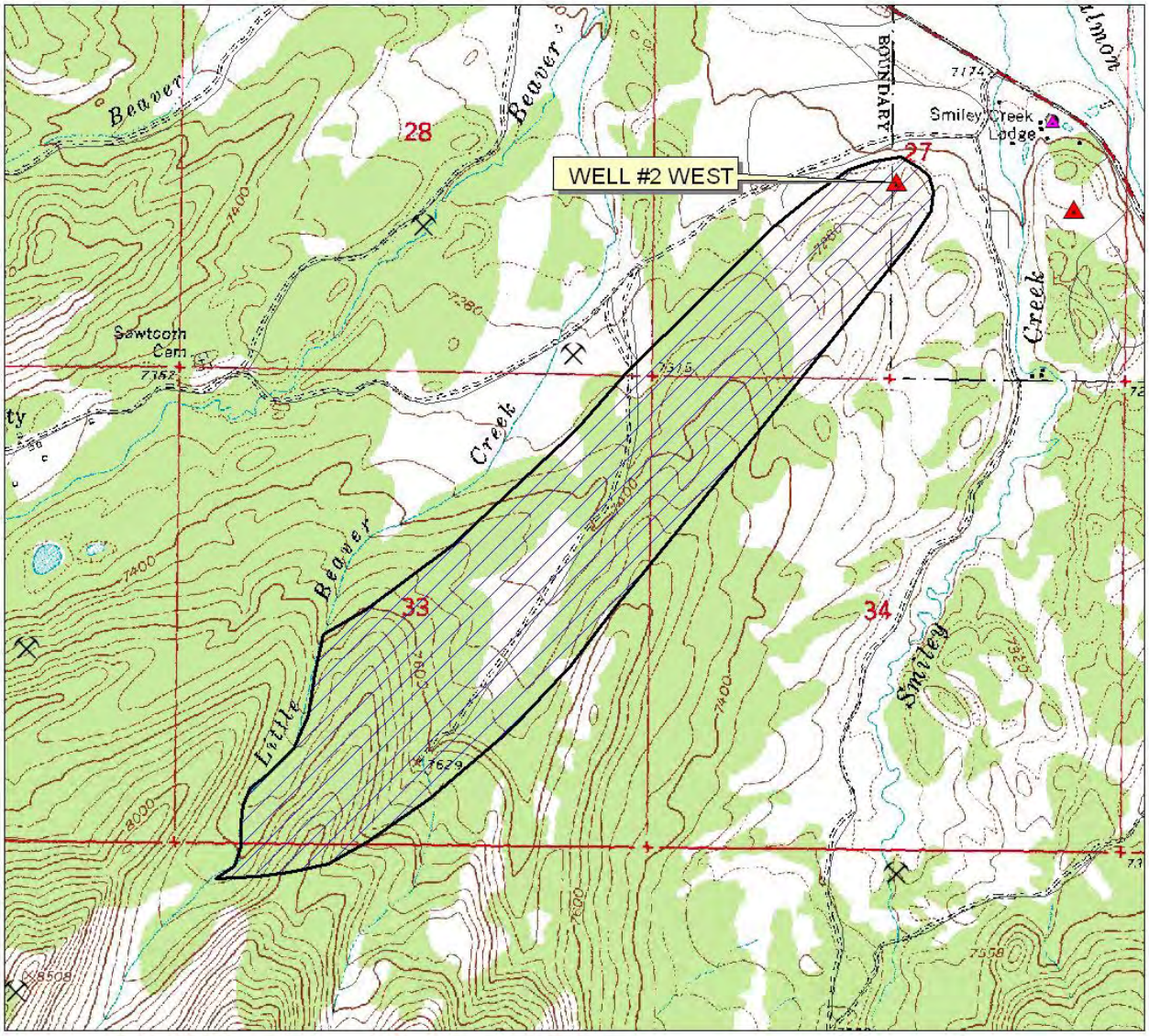


Figure 3. Smiley Creek Subdivision Delineation Map and Potential Contaminant Source Locations



LEGEND

SWA Delineations

- 3 Year TOT (1B)
- 6 Year TOT (2)
- 10 Year TOT (3)
- Active Dairy Sites
- Proposed Dairy Sites
- Recharge Points
- Deep Injection Wells
- Wellheads (PWS)
- Closed UST Sites
- Group 1 Sites
- Toxics Release Inventory - '98
- Open UST Sites
- Cyanide Sites
- CERCLA SITES
- LUST Sites
- Streets (100k)
- RCRA Sites
- AST Locations
- Boise VOCs
- Business Mailing List
- NPDES Locations
- LandFills
- SARA Title III Sites
- Mine Locations
- WLAP

0 0.2 0.4 0.6 Miles

N

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS# 5070087
Well #2 West

Potential Contaminant Sources and Land Use

Land use for both Well #1 and Well #2 rated low for IOCs, VOCs, SOCs, and for microbial contaminants. The lack of agriculture activity within the delineation and not having any potential contaminant sources contributed to the low ratings.

Final Susceptibility Ranking

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, potential contaminant sources within 50 feet of a wellhead will automatically lead to a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) contribute greatly to the overall ranking. In this case, Wells #1 and #2 rated moderate for all contaminant sources, except IOCs, due to the lack of potential contaminants located in the delineated area. The IOC rating is due to the presence of arsenic in the system's tested water at concentrations higher than the new MCL of 10 ppb.

Table 1. Summary of Smiley Creek Water Users Association Inc. Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	L	L	L	L	M	H*	M	M	M
Well #2	M	L	L	L	L	M	H*	M	M	M

H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H* = Automatic high rating due to an IOC detection over the MCL

Susceptibility Summary

In terms of total susceptibility, Well #1 rated moderate for VOCs, SOCs, and microbial bacteria. The well rated automatically high for IOCs due to an arsenic detection above the new MCL level of 10 ppb. System construction rated and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and for microbial bacteria (Table 1).

In terms of total susceptibility, Well #2 rated moderate for VOCs, SOCs, and microbial bacteria. The well rated automatically high for IOCs due to an arsenic detection above the new MCL level of 10 ppb. System construction rated and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and for microbial bacteria (Table 1).

No VOCs, SOCs, or microbial bacteria have ever been detected in either well's tested water. Traces of the IOC nitrate have been detected, however, according SDWIS, concentrations have been significantly below the MCL of 10 mg/L. Arsenic has also been detected in the system's tested water at concentrations above the new arsenic MCL of 10 ppb.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For Smiley Creek Water Users Association Inc., drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Actions should be taken to keep a 50-foot radius circle clear around the wellheads. Any spills within the delineation should be carefully monitored and dealt with. As much of the designated protection area is outside the direct jurisdiction Smiley Creek Water Users Association Inc., making collaboration and partnerships with state and local agencies and industry groups are critical to the success of drinking water protection. The well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A public education program should be a primary focus of any drinking water protection plan as the delineation is near residential land uses areas. Public education topics could include proper household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office	(208) 736-2190
State DEQ Office	(208) 373-0502

Website: http://www.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper (mlharper@idahoruralwater.com), Idaho Rural Water Association, at 1-208-343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Borgert, J.A., Lundeen, K.A., and Thackray, G.D., 1999, Glacial Geology of the Southeastern Sawtooth Mountains, *in* Hughes, S.S., and Thackray, G.D., eds., Guidebook to the Geology of Eastern Idaho: Pocatello, Idaho Museum of Natural History, p. 205-217.

Department of Water Resources, Water Information Bulletin 30: p. 33-42.

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Link, P.K., 2002, Digital Atlas of Idaho [Online]. [Accessed 01-31-05]. Available from World Wide Web: http://imnh.isu.edu/digitalatlas/counties/geomaps/geomap.htm.

Sanitary Survey for Smiley Creek Water Users Association Inc., 2004

Appendix A

Smiley Creek Water Users Association Inc.
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

	Public Water System Name:	Smiley Creek Subdivision						Version 2.1
	Public Water System Number:	5070087						5/19/1999
	Well Number:	1						
	Date:	3/1/2005						
	Person Conducting Assessment:	Dennis Owsley						
	Hydrologic Sensitivity Worksheet							
							Value	Comments
(1)	Do the soils belong to drainage classes in the poorly drained through moderately well drained categories?		(•) Yes	( ) No			0	
(2)	Is the vadose zone composed predominantly of gravel, fractured rock; or is unknown?		(•) Yes	( ) No			1	
(3)	Is the depth to first groundwater greater than 300 feet?		( ) Yes	(•) No			1	
(4)	Is an aquitard present with silt/clay or sedimentary interbeds within basalt with greater than 50 feet cumulative thickness?		( ) Yes	(•) No			2	
			Hydrologic Sensitivity Score =				**4**	
	Final Hydrologic Sensitivity Ranking =	Moderate Hydrologic Sensitivity Score (2 to 4 points)						

Public Water System Name: Smiley Creek Subdivision — Version 2.1
Public Water System Number: 5070087 — 5/19/1999
Well Number: 1
Date: 3/1/2005
Person Conducting Assessment: Dennis Owsley

Potential Contaminant Source/Land Use Worksheet

Land Use/Zone IA

			IOC Score	VOC Score	SOC Score	Microbial Score	Comment
(1)	Land Use (Pick the Predominant Land Type)	Rangeland, Woodland, Basalt	0	0	0	0	
(2)	Is Farm Chemical Use High or Unknown? (Answer No if (1) = Urban/Commercial)	○ Yes ◉ No	**Stop: Go Directly to Step 3**				
2a	Indicate approriate chemical category	☐ IOCs ☐ VOCs ☐ SOCs	0	0	0	0	
(3)	Are IOC, VOC, SOC, Microbial or Radionuclide contaminant sources Present in Zone IA? OR Have SOC/VOC contaminants been detected in the well? OR have IOC contaminants been detected above MCL levels in the well? If Yes, please check the appropriate chemical	○ Yes ◉ No ☑ IOCs ☑ VOCs ☑ SOCs ☑ Microbials					
		Land Use Subtotal	0	0	0	0	

Zone IB

								Comment
(4)	Contaminant Sources Present in Zone IB?	○ Yes ◉ No						
				IOC Score	VOC Score	SOC Score	Microbial Score	
	Number of Sources in Zone IB in Each Category?	**# IOC Sources**	0	0	0	0	0	
	(List sources by Category up to a Maximum of Four per Category)	**# VOC Sources**	0					
		# SOC Sources	0					
		# Microbial Sources	0					
(5)	Are there Sources of Class II or III Leachable Contaminants in Zone IB?	○ Yes ◉ No						
				IOC Score	VOC Score	SOC Score	Microbial Score	
	(List Sources up to a Maximum of Four per Category)	**# IOC Sources**	0	0	0	0	0	
		# VOC Sources	0					
		# SOC Sources	0					
(6)	Does a Group 1 Priority Area Intercept or Group 1 Priority Site Fall Within Zone IB?	○ Yes ◉ No ☑ IOCs ☐ VOCs ☐ SOCs ☑ Microbials		0	0	0	0	
(7)	Pick the Best Description of the Amount and Type of Agricultural Land in Zone IB.	Less Than 25% Agricultural Land		0	0	0	0	
		Zone IB Subtotal		0	0	0	0	

Zone II

				IOC Score	VOC Score	SOC Score	Microbial Score
(9)	Are Contaminant Sources Present in Zone II?	○ Yes ◉ No	Go to Step 10				
9a	What types of chemicals?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(10)	Are there Sources of Class II or III Leachable Contaminants in Zone II?	○ Yes ◉ No	Go to Step 11				
10a	What type of contaminant?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(11)	Pick the Best Description of the Amount and Type of Agricultural Land in Zone II.	Less Than 25% Agricultural Land		0	0	0	0
		Zone II Subtotal		0	0	0	0

Zone III

				IOC Score	VOC Score	SOC Score	Microbial Score
(12)	Contaminant Sources Present in Zone III?	○ Yes ◉ No	Go to Step 13				
12a	What types of contaminant?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(13)	Are there Sources of Class II or III Leachable Contaminants in Zone III?	○ Yes ◉ No	Go to Step 14				
13a	What types of contaminants?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(14)	Is there Irrigated Agricultural Land That Occupies > 50% of Zone III?	○ Yes ◉ No		0	0	0	0
		Zone III Subtotal		0	0	0	0

	IOC Score	VOC Score	SOC Score	Microbial Score
Community and Non-Community, Non-Transient System Contaminant Source/Land Use Score	6	6	6	4

Final Community/NC-NT System Ranking

IOC Score = Low Contaminant/Land Use Score (0 to 10 points)
VOC Score = Low Contaminant/Land Use Score (0 to 10 points)
SOC Score = Low Contaminant/Land Use Score (0 to 10 points)
Microbial Score = Low Contaminant/Land Use Score (0 to 10 points)

	Public Water System Name:	Smiley Creek Subdivision				Version 2.1
	Public Water System Number:	5070087				5/19/1999
	Well Number:	1				
	Date:	3/1/2005				
	Person Conducting Assessment:	Dennis Owsley				
	Source Construction Worksheet					
						Comments
(1)	Well Drill Date	Input Date	July 20, 1970			
(2)	Well Drillers Log Available?	○ Yes	◉ No			If no well log is available answers to (4) and (6) are assumed to be NO and points are added to score.
				Year		
(3)	Sanitary Survey Available? If Yes, for what year?	◉ Yes	○ No	2004		If no sanitary survey is available answer to Questions (5) and (8) is assumed to be NO and points are added to score.
					Value	
(4)	Are current IDWR well construction standards being met?		○ Yes ◉ No		1	
(5)	Is the wellhead and surface seal maintained in good condition?		◉ Yes ○ No		0	
(6)	Do the casing and annular seal extend to a low permeability unit?		○ Yes ◉ No		2	
(7)	Is the highest production interval of the well at least 100 feet below the static water level?		○ Yes ◉ No		1	
(8)	Is the well located outside the 100 year floodplain and is it protected from surface runoff?		◉ Yes ○ No		0	
			Source Construction Score =		4	
	Final Source Construction Ranking =	Moderate Source Construction Score (2 to 4 points)				

Public Water System Name:	Smiley Creek Subdivision
Public Water System Number:	5070087
Well Number:	1
Date:	3/1/2005
Person Conducting Assessment:	Dennis Owsley

SWA Susceptibility Rating Sheet

Zone IA Susceptability Rating	
Warning: Due to specific conditions found in Zone IA this well has been assigned a High overall susceptability for:	IOC Contaminants
This rating is based on: (1)The presence of contaminant sources in Zone IA or (2)The detection of specific SOC/VOC chemicals in the well or (3)The detection of specific IOC chemicals above MCL levels in the well.	VOC Contaminants
Public Water Systems may petition IDEQ to revise susceptibility rating based on elimination of contaminant sources or other site-specific factors.	SOC Contaminants

Community and Noncommunity-Nontransient Sources	**IOC Score**	**SOC Score**	**VOC Score**
Hydrologic Sensitivity Score =	4	4	4
Potential Contaminant Source/Land Use Score X 0.20 =	1	1	1
Source Construction Score =	4	4	4
Total	**9**	**9**	**9**
FINAL WELL RANKING			
IOC Ranking is Moderate (6 to 12 points)			
SOC Ranking is Moderate (6 to 12 points)			
VOC Ranking is Moderate (6 to 12 points)			

Microbial Susceptability Rating	**Score**
Hydrologic Sensitivity Score =	4
Potential Contaminant Source/Land Use Score X 0.375 =	2
Source Construction Score =	4
Total	**10**
FINAL WELL RANKING	
Microbial Ranking is Moderate (6 to 12 points)	

	Public Water System Name:	Smiley Creek Subdivision					Version 2.1
	Public Water System Number:	5070087					5/19/1999
	Well Number:	2					
	Date:	3/1/2005					
	Person Conducting Assessment:	Dennis Owsley					
	Hydrologic Sensitivity Worksheet						
						Value	Comments
(1)	Do the soils belong to drainage classes in the poorly drained through moderately well drained categories?		(•) Yes	( ) No		0	
(2)	Is the vadose zone composed predominantly of gravel, fractured rock; or is unknown?		(•) Yes	( ) No		1	
(3)	Is the depth to first groundwater greater than 300 feet?		( ) Yes	(•) No		1	
(4)	Is an aquitard present with silt/clay or sedimentary interbeds within basalt with greater than 50 feet cumulative thickness?		( ) Yes	(•) No		2	
			Hydrologic Sensitivity Score =			**4**	
	Final Hydrologic Sensitivity Ranking =	Moderate Hydrologic Sensitivity Score (2 to 4 points)					

	Public Water System Name:	Smiley Creek Subdivision			Version 2.1				
	Public Water System Number:	5070087			5/19/1999				
	Well Number:	2							
	Date:	3/1/2005							
	Person Conducting Assessment:	Dennis Owsley							

Potential Contaminant Source/Land Use Worksheet

	Land Use/Zone IA				IOC Score	VOC Score	SOC Score	Microbial Score	Comment
(1)	Land Use (Pick the Predominant Land Type)	Rangeland, Woodland, Basalt			0	0	0	0	
(2)	Is Farm Chemical Use High or Unknown? (Answer No if (1) = Urban/Commercial)	○ Yes	◉ No		**Stop: Go Directly to Step 3**				
2a	Indicate approriate chemical category	☐ IOCs ☐ VOCs ☐ SOCs			0	0	0	0	
(3)	Are IOC, VOC, SOC, Microbial or Radionuclide contaminant sources Present in Zone IA? OR Have SOC/VOC contaminants been detected in the well? OR have IOC contaminants been detected above MCL levels in the well? If Yes, please check the appropriate chemical	○ Yes	◉ No						
		☑ IOCs ☑ VOCs ☑ SOCs ☑ Microbials							
				Land Use Subtotal	0	0	0	0	

	Zone IB								Comment
(4)	Contaminant Sources Present in Zone IB?	○ Yes	◉ No						
					IOC Score	VOC Score	SOC Score	Microbial Score	
	Number of Sources in Zone IB in Each Category?			**# IOC Sources** 0	0	0	0	0	
	(List sources by Category up to a Maximum of Four per Category)			**# VOC Sources** 0					
				# SOC Sources 0					
				# Microbial Sources 0					
(5)	Are there Sources of Class II or III Leachable Contaminants in Zone IB?	○ Yes	◉ No		IOC Score	VOC Score	SOC Score	Microbial Score	
	(List Sources up to a Maximum of Four per Category)			**# IOC Sources** 0	0	0	0	0	
				# VOC Sources 0					
				# SOC Sources 0					
(6)	Does a Group 1 Priority Area Intercept or Group 1 Priority Site Fall Within Zone IB?	○ Yes	◉ No		0	0	0	0	
		☑ IOCs ☐ VOCs ☐ SOCs ☑ Microbials							
(7)	Pick the Best Description of the Amount and Type of Agricultural Land in Zone IB.	Less Than 25% Agricultural Land			0	0	0	0	
				Zone IB Subtotal	0	0	0	0	

Zone II

				IOC Score	VOC Score	SOC Score	Microbial Score
(9)	Are Contaminant Sources Present in Zone II?	○ Yes ◉ No	Go to Step 10				
9a	What types of chemicals?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(10)	Are there Sources of Class II or III Leachable Contaminants in Zone II?	○ Yes ◉ No	Go to Step 11				
10a	What type of contaminant?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(11)	Pick the Best Description of the Amount and Type of Agricultural Land in Zone II.	Less Than 25% Agricultural Land		0	0	0	0
		Zone II Subtotal		0	0	0	0

Zone III

				IOC Score	VOC Score	SOC Score	Microbial Score
(12)	Contaminant Sources Present in Zone III?	○ Yes ◉ No	Go to Step 13				
12a	What types of contaminant?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(13)	Are there Sources of Class II or III Leachable Contaminants in Zone III?	○ Yes ◉ No	Go to Step 14				
13a	What types of contaminants?	☑ IOCs ☑ VOCs ☑ SOCs		0	0	0	0
(14)	Is there Irrigated Agricultural Land That Occupies > 50% of Zone III?	○ Yes ◉ No		0	0	0	0
		Zone III Subtotal		0	0	0	0

	IOC Score	VOC Score	SOC Score	Microbial Score
Community and Non-Community, Non-Transient System Contaminant Source/Land Use Score	0	0	0	0

Final Community/NC-NT System Ranking

IOC Score = Low Contaminant/Land Use Score (0 to 10 points)

VOC Score = Low Contaminant/Land Use Score (0 to 10 points)

SOC Score = Low Contaminant/Land Use Score (0 to 10 points)

Microbial Score = Low Contaminant/Land Use Score (0 to 10 points)

	Public Water System Name:	Smiley Creek Subdivision				Version 2.1
	Public Water System Number:	5070087				5/19/1999
	Well Number:	2				
	Date:	3/1/2005				
	Person Conducting Assessment:	Dennis Owsley				
	Source Construction Worksheet					
						Comments
(1)	Well Drill Date	Input Date	July 20, 1970			
(2)	Well Drillers Log Available?	(•) Yes	( ) No			If no well log is available answers to (4) and (6) are assumed to be NO and points are added to score.
				Year		
(3)	Sanitary Survey Available? If Yes, for what year?	(•) Yes	( ) No	2004		If no sanitary survey is available answer to Questions (5) and (8) is assumed to be NO and points are added to score.
					Value	
(4)	Are current IDWR well construction standards being met?		( ) Yes (•) No		1	
(5)	Is the wellhead and surface seal maintained in good condition?		(•) Yes ( ) No		0	
(6)	Do the casing and annular seal extend to a low permeability unit?		(•) Yes ( ) No		0	
(7)	Is the highest production interval of the well at least 100 feet below the static water level?		( ) Yes (•) No		1	
(8)	Is the well located outside the 100 year floodplain and is it protected from surface runoff?		(•) Yes ( ) No		0	
			Source Construction Score =		2	
	Final Source Construction Ranking =	Moderate Source Construction Score (2 to 4 points)				

Public Water System Name:	Smiley Creek Subdivision
Public Water System Number:	5070087
Well Number:	2
Date:	3/1/2005
Person Conducting Assessment:	Dennis Owsley

SWA Susceptibility Rating Sheet

Zone IA Susceptability Rating

Warning: Due to specific conditions found in Zone IA this well has been assigned a High overall susceptability for: No Contaminant Categories

This rating is based on: (1)The presence of contaminant sources in Zone IA or (2)The detection of specific SOC/VOC chemicals in the well or (3)The detection of specific IOC chemicals above MCL levels in the well.

Public Water Systems may petition IDEQ to revise susceptibility rating based on elimination of contaminant sources or other site-specific factors.

Community and Noncommunity-Nontransient Sources	IOC Score	SOC Score	VOC Score
Hydrologic Sensitivity Score =	4	4	4
Potential Contaminant Source/Land Use Score X 0.20 =	0	0	0
Source Construction Score =	2	2	2
Total	**6**	**6**	**6**

FINAL WELL RANKING

IOC Ranking is Moderate (6 to 12 points)

SOC Ranking is Moderate (6 to 12 points)

VOC Ranking is Moderate (6 to 12 points)

Microbial Susceptability Rating	Score
Hydrologic Sensitivity Score =	4
Potential Contaminant Source/Land Use Score X 0.375 =	0
Source Construction Score =	2
Total	**6**

FINAL WELL RANKING

Microbial Ranking is Moderate (6 to 12 points)